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09/409,338	09/30/1999	MAKOTO YAMADA	030662-047	5232

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EXAMINER

SHOSHO, CALLIE E

ART UNIT PAPER NUMBER

1714

DATE MAILED: 04/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/409,338

Applicant(s)

YAMADA ET AL.

Examiner

Callie E. Shosho

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 17 January 2003 and 10 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,5,9,10,13 and 14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,5,9,10,13 and 14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 22.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

1. All outstanding rejections except those described below are overcome by applicants' amendments filed 1/17/03 and 2/10/03.

The new grounds of rejection as set forth below are necessitated by applicants' amendment and thus, the following action is final.

**Claim Rejections - 35 USC § 112**

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1, 5, 9-10, and 13-14 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The rejection is adequately set forth in paragraph 4 of the office action mailed 9/17/02, Paper No. 19, and is incorporated here by reference.

**Claim Rejections - 35 USC § 103**

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

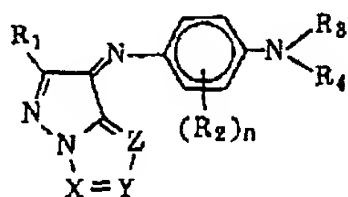
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5. Claims 1, 5, 9-10, and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nigam et al. (U.S. 5,973,025) in view of Bates et al. (U.S. 5,958,999), Schwarz (U.S. 5,665,150), and either JP 03231975 or JP 09059552.

Nigam et al. discloses an ink jet ink having a viscosity of 1.5-15 cP wherein the ink comprises aqueous medium, 0.1-20% dye which is dissolved in aqueous medium, glycerol, and basic polymer corresponding to presently claimed formula I wherein L is a single bond, -CO-, arylene, or alkylene and Am is 1-imidazolyl. It is disclosed that the polymer has a molecular weight of preferably 300-100,000. There is also disclosed a method for forming an ink image onto a substrate using an ink jet printer to print the above ink (col.4, lines 11-13, col.5, lines 45-46, col.8, lines 52-53, col.9, lines 46-50, col.10, lines 17-18 and 42-46, col.11, lines 34 and 59-61, col.12, lines 41-42 and 48-49, col.13, lines 40-45, col.18, lines 42-43, col.20, lines 6-15, col.32, lines 25, and col.33, lines 15-17).

The difference between Nigam et al. and the present claimed invention is the requirement in the claims of (a) specific type of dye and (b) the amounts of glycerol and basic polymer present in the ink.

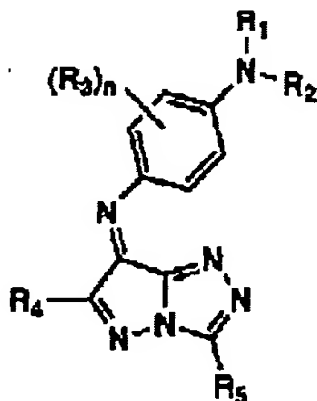
With respect to difference (a), JP 03231975, an English translation of which is included in this office action, is drawn to ink jet ink and discloses dye of the formula:



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wherein  $R_3$  and  $R_4$ , which correspond to presently claimed  $R^4$  and  $R^5$ , are each hydrogen, alkyl, cycloalkyl, aralkyl, or aryl group,  $R_2$ , which corresponds to presently claimed  $R^3$  is hydrogen, cyano, alkyl, alkoxy, aryl, or halogen,  $R_1$ , which corresponds to presently claimed  $R^1$ , is hydrogen, cyano, alkyl, alkoxy, aryl, , or halogen, presently claimed X, Y, and Z are independently either  $-CR_5=$  or  $-N=$ , where  $R_5$  is hydrogen or alkyl, aryl, or heterocyclic, group, (abstract, claim 1, page 7, pages 18-25, and pages 17-26). The motivation for using such dye is to produce a printed image with good hue (page 5, first full paragraph).

Alternatively, JP 09059552, which is drawn to ink jet ink, disclose the use of dyes of the formula:



CR<sub>5</sub> which corresponds to presently claimed C(R<sup>2</sup>), where R<sub>5</sub> is hydrogen, aliphatic, or aromatic group, and presently claimed Y and Z are each -N= (abstract, claim 1, and paragraphs 9, and 24-30). The motivation for using such dye in the ink composition is that the dye produces a printed image that has excellent color tone, reproducibility, and resistance to light (paragraph 7).

With respect to difference (b), there is no disclosure in Nigam et al. of the amounts of glycerol and basic polymer present in the ink with the exception of the disclosure of amounts as set forth in the examples.

On the one hand, it is noted that Example 44 discloses ink comprising dye, glycerol, and as calculated, approximately 2% basic polymer. However, the basic polymer utilized in this example is not the basic polymer presently claimed, i.e. having a side-chain containing 1-imidazolyl, but rather a poly(vinylpyridine). However, it would have been obvious to one of ordinary skill in the art given the disclosure of the equivalence and interchangeability of the basic polymers disclosed by Nigam et al., that any of the basic polymers including those having a side-chain containing 1-imidazolyl, would be suitable for use with glycerol and would also be utilized at 2% as set forth in the example, and thus, one of ordinary skill in the art would have arrived at the claimed invention.

On the other hand, Bates et al., which is drawn to ink jet inks, discloses the use of 0.1-10% basic polymer containing nitrogen-containing heterocyclic groups having a side-chain containing 1-imidazolyl in order to produce ink with good waterfastness and stability (col.26-34) while Schwarz (U.S. 5,665,150) disclose that aqueous ink jet inks typically comprise 5-50% humectant such as glycerol (col.13, lines 32-34, 37, and 47-52).

In light of the motivation for using specific dye disclosed by either JP 03231975 or JP09059552 as described above and for using specific amount of polymer disclosed by Bates et al. and specific amount of glycerol disclosed by Schwarz as described above, it therefore would have been obvious to one of ordinary skill in the art to use such dye and this amount of polymer and glycerol in the ink if Nigam et al. in order to produce an ink with good waterfastness and stability that will not dry out and clog the printer nozzles and that will produce image with good hue, or alternatively, excellent color tone, reproducibility, and resistance to light, and thereby arrive at the claimed invention.

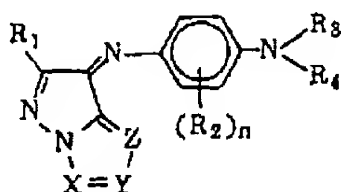
6. Claims 1, 5, 9-10, and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bates et al. (U.S. 5,958,999) in view of Nigam et al. (U.S. 5,973,025), Schwarz (U.S. 5,665,150), and either JP 03231975 or JP 09059552.

Bates et al. disclose an ink jet ink containing 1-10% dye soluble in the ink composition, aqueous medium, glycerol, and 0.1-10% basic polymer which corresponds to presently claimed formula I wherein L is a single bond and Am is a nitrogen atom-containing heterocyclic group including vinylimidazole. It is disclosed that the polymer has a molecular weight of less than 50,000. There is also disclosed a method for forming an ink image onto a substrate using an ink jet printer to print the above ink (col.3, lines 15-35, col.4, lines 11-15, col.5, lines 48-50 and 54-55, col.7, lines 16-17, 36, and 48-57, col.9, line 65, col.10, lines 20 and 30, and example 11).

The difference between Bates et al. and the present claimed invention is the requirement in the claims of (a) specific type of dye, (b) amount of glycerol, and (c) the viscosity of the ink.

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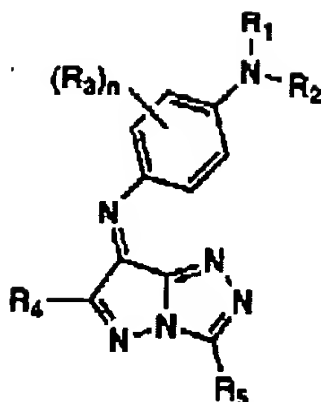
With respect to difference (a), JP 03231975, an English translation of which is included in this office action, is drawn to ink jet ink and discloses an oil-soluble dye of the formula:



wherein  $R_3$  and  $R_4$ , which correspond to presently claimed  $R^4$  and  $R^5$ , are each hydrogen, alkyl, cycloalkyl, aralkyl, or aryl group,  $R_2$ , which corresponds to presently claimed  $R^3$  is hydrogen, cyano, alkyl, alkoxy, aryl, or halogen,  $R_1$ , which corresponds to presently claimed  $R^1$ , is hydrogen, cyano, alkyl, alkoxy, aryl, , or halogen, and presently claimed X, Y, and Z are independently either  $-CR_5=$  or  $-N=$ , where  $R_5$  is hydrogen or alkyl, aryl, or heterocyclic, group, (abstract, claim 1, page 7, pages 18-25, and pages 17-26). The motivation for using such dye is to produce a printed image with good hue (page 5, first full paragraph).

Alternatively, JP 09059552, which is drawn to ink jet ink, disclose the use of oil-soluble dyes of the formula:





wherein  $R_1$  and  $R_2$ , corresponding to presently claimed  $R^4$  and  $R^5$ , are hydrogen, aliphatic, aromatic, or heterocyclic group,  $R_3$  which each corresponds to presently claimed  $R^3$  is hydrogen, halogen, alkoxy, aryl, carboxyl, or amino group,  $R_4$ , which corresponds to presently claimed  $R^1$ , is aliphatic, aromatic, heterocyclic, alkoxy, sulfonyl, or amino group, presently claimed  $X$  is -  $CR_5=$  which corresponds to presently claimed  $C(R^2)$ , where  $R_5$  is hydrogen, aliphatic, or aromatic group, and presently claimed  $Y$  and  $Z$  are each  $-N=$  (abstract, claim 1, and paragraphs 9, and 24-30). The motivation for using such dye in the ink composition is that the dye produces a printed image that has excellent color tone, reproducibility, and resistance to light (paragraph 7).

In light of the motivation for using specific dye disclosed by either JP 03231975 or JP09059552 as described above, it therefore would have been obvious to one of ordinary skill in the art to use such dye in the ink if Bates et al. in order to produce an ink with good that will produce image with good hue, or alternatively, excellent color tone, reproducibility, and resistance to light, and thereby arrive at the claimed invention.

With respect to difference (b), it is noted that Bates et al. disclose the use of glycerol, but there is no explicit disclosure of the amount in which it is used.

However, on the one hand, Bates et al. disclose that the amount of additives, including humectants such as glycerol, utilized depends on the molecular weight of the polymer, nature of the polymer, viscosity of the ink, etc. (col.7, lines 36-37 and 41-46).

In light of the above and given that Bates et al. disclose ink as presently claimed including identical type of polymer, it would have been within the skill level of, as well as obvious to, one of ordinary skill in the art to choose amounts of glycerol, including those presently claimed, in order to produce ink which will not dry out and clog the printer nozzles, and thereby arrive at the claimed invention.

On the other hand, Schwarz (U.S. 5,665,150) disclose that aqueous ink jet inks typically comprise 5-50% humectant such as glycerol (col.13, lines 32-34, 37, and 47-52).

In light of the motivation for using specific amount of glycerol disclosed by Schwarz as described above, it therefore would have been obvious to one of ordinary skill in the art to use this amount of glycerol in the ink if Bates et al. in order to produce an ink that will not dry out and clog the printer nozzles, and thereby arrive at the claimed invention

With respect to difference (c), Bates et al. does not explicitly disclose the viscosity of their ink jet inks. However, given that if the ink viscosity is too high, the ink clogs the printer nozzles, it would have been within the level of one of ordinary skill in the art to control the viscosity of the ink jet ink to avoid printer clogging. Evidence to support this position is found in Nigam et al. which discloses that the viscosity of an ink is adjusted depending on its desired utility, and that for ink jet inks, the viscosity is typically 1.5-15 cP (col.18, lines 38-45).

In light of the above, it would have been obvious to one of ordinary skill in the art to control the viscosity of the ink jet ink of Bates et al. to 1.5 to 15 cP in order to produce an ink that will not clog the printer nozzles, and thereby arrive at the claimed invention.

**Response to Arguments regarding 35 USC 112 rejection**

7. Applicants' arguments have been fully considered but they are not persuasive.

Specifically, applicants argue that the while the recitation "contained in amount of not less than 2 weight %" is not literally in the disclosure, as set forth in MPEP 2163, subject matter need not literally be described for the specification to satisfy the description requirement.

Applicants also argue that, contrary to examiner's position, the recitation as cited above does not encompass all amounts greater than 2 weight % given that the present claims specify that the viscosity of the ink is 50 cP or lower which implicitly defines the upper limit on the glycerol present in the ink.

However, while it is agreed that there must not be literal disclosure of the subject matter to satisfy the description requirement, nevertheless, there is nothing on the record at the time of filing of the original specification to support the recitation that the glycerol is present in an amount of "not less than 2 weight %". Based on the specification as originally filed, applicants have support, which is found only in the examples, for the recitation of glycerol in the amounts of 2, 3, and 5 wt.%. There is no support in the specification for any other amounts of glycerol except for those recited in the examples. The few specific embodiments set forth in the examples do not provide support for the applicant to broadly recite "not less than 2 weight %" in the claims.

While it is agreed that the amount of glycerol would effect the viscosity of the ink, it is not the only ingredient present in the ink that would effect the viscosity. That is, the viscosity cannot implicitly define the upper limit of the amount of glycerol because glycerol is not the only component present in the ink that the effects the viscosity. For instance, the amount of polymer present as well as its molecular weight would also significantly effect the viscosity of the ink. Further, given that the viscosity of the ink depends on several factors of which the amount of glycerol is but one and given that it is not clear how significantly the glycerol effects the viscosity as compared to the other components of the ink, it is not clear how or if the upper limit of the amount of glycerol can be determined from the viscosity.

**Response to Arguments regarding 35 USC 103 rejections**

8. Applicants argument shave been fully considered but they are not persuasive.

Specifically, applicants argue that:

- (a) there is no disclosure in Nigam et al. or Bates et al. of dye as presently claimed.
- (b) Nigam et al. does not disclose ink as presently claimed.
- (c) There is no disclosure in Schwarz et al. of polymer with 1-imidazolyl side chain as presently claimed.
- (d) Bates et al. do not disclose ink as presently claimed.

With respect to difference (a), it is agreed that there is no disclosure in either Nigam et al. or Bates et al. of specific dye as presently claimed. However, this is why Nigam et al. and Bates

et al. are now each used in combination with JP 03231975 or JP 09059552, which are each drawn to ink jet inks and which each disclose dye identical to that presently claimed.

With respect to difference (b), applicants argue that Nigam et al. disclose lengthy list of additives for which glycerol is but one and that there are no examples in Nigam et al. which disclose use of combination of polymer with 1-imidazolyl side chain and glycerol as presently claimed.

However, “applicant must look to the whole reference for what it teaches. Applicant cannot merely rely on the examples and argue that the reference did not teach others.” *In re Courtright*, 377 F.2d 647, 153 USPQ 735,739 (CCPA 1967).

A fair reading of the reference as a whole clearly disclose that Nigam et al. do disclose polymer with 1-imidazolyl side chain and glycerol as required in the present claims.

With respect to the glycerol, it is noted that Nigam et al. describes 11 types of additives including humectant of which glycerol is one. Thus, glycerol is not chosen from a lengthy list. Further, Nigam et al. disclose that it is “preferable” to add humectant to the ink. Additionally, example 44 of Nigam et al. explicitly discloses the use of glycerol. With respect to the presently claimed polymer, it is noted that although Nigam et al. disclose the use of other types of polymer, applicants’ attention is drawn to MPEP 2131.02 (A) which states that “..when the species is clearly named, the species claim is anticipated no matter how many other species are additionally named”. *Ex Parte A*, 17 USPQ2d 1716 (Bd. Pat. App. & Inter. 1990).

Thus, given that Nigam et al. disclose polymer and glycerol as presently claimed, and absent clear and convincing evidence to the contrary, it therefore would have been obvious to

one of ordinary skill in the art to use polymer with 1-imidazolyl side chain and glycerol as presently claimed, and thereby arrive at the claimed invention.

With respect to argument (c), while it is agreed that there is no disclosure in Schwarz of polymer with 1-imidazolyl side chain as required in the present claims, note that Schwarz is used as teaching reference, and therefore, it is not necessary for this secondary reference to contain all the features of the presently claimed invention, *In re Nievelt*, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973), *In re Keller* 624 F.2d 413, 208 USPQ 871, 881 (CCPA 1981). Rather this reference teaches a certain concept, and in combination with the primary reference, discloses the presently claimed invention.

With respect to argument (d), applicants argue that Bates et al. disclose large list of polymers of which polymer with 1-imidazolyl side chain is but one and large list of additives of which glycerol is but one with no motivation to select out the presently claimed polymer or glycerol.

However, it is noted that Bates et al. only disclose the use of three types of polymer, namely, polyvinylimidazole, polyvinylpyridine, and polyethyleneimine and thus, one of ordinary skill in the art would not have to choose from a large group to select the presently claimed polymer. With respect to the glycerol, it is noted that Bates et al. disclose six different types of additives that are “generally incorporated into the ink compositions to impart a number of desired properties while maintaining the stability of the ink” and that humectant, of which glycerol is one, is one of the additives. In light of this disclosure, and absent evidence to the

contrary, it would have been within the skill level of one of ordinary skill in the art to choose humectant, including glycerol, in order to impart the desired properties to the ink.

Thus, given that a fair reading of Bates et al. as a whole discloses polymer and glycerol as presently claimed, and absent evidence to the contrary, it is the examiner's position that Bates et al. remains a relevant reference against the present claims.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 703-305-0208. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 703-306-2777. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Callie E. Shosho  
Examiner  
Art Unit 1714

CS

April 26, 2003